



IFW AF/2861

PATENT APPLICATION

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: Q61721

Tsuyoshi KITAHARA

Appln. No.: 09/708,514

Group Art Unit: 2861

Confirmation No.: 1708

Examiner: Judy NGUYEN

Filed: November 9, 2000

For: INK-JET RECORDING HEAD AND METHOD OF MANUFACTURING THE SAME

SUBMISSION OF APPELLANT'S BRIEF ON APPEAL

MAIL STOP APPEAL BRIEF - PATENTS


Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an original and two copies of Appellant's Brief on Appeal. A check for the statutory fee of \$330.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860


Allison M. Tulino
Registration No. 48,294

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: April 21, 2004



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APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents

P.O. Box 1450

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Sir:

In accordance with the provisions of 37 C.F.R. § 1.192, Appellant submits the following:

I. REAL PARTY IN INTEREST

Based on information supplied by Appellant and to the best of Appellant's legal representative's knowledge, the real party in interest is the assignee, SEIKO EPSON CORPORATION.

II. RELATED APPEALS AND INTERFERENCES

There are no other related appeals or interferences known to Appellant, Appellant's representative, or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal.

III. STATUS OF CLAIMS

Claim 1 stands rejected under 35 U.S.C. § 102(b), and claims 3, 4, 7 and 54 stand rejected under 35 U.S.C. § 103(a). Also, claim 2 was previously canceled, and claims 5, 6 and 8-53 were previously withdrawn.

IV. STATUS OF AMENDMENTS

In the October 24, 2003 Advisory Action, the Examiner indicated that the claims Amendments set forth in the October 14, 2003 Amendment were entered. Therefore, all amendments to the claims, which have been made during prosecution of the present application, have been entered.

V. SUMMARY OF THE INVENTION

Fig. 1 shows an illustrative, non-limiting embodiment of the invention which relates to an ink jet recording head. The ink jet recording head 1 contains a plate shaped member 2 that includes a first layer 4, a second layer 5 and an intermediate layer 6 (pg. 23 of Application). Etched partition walls 7 are formed in the first layer 4, on the front surface 2a of the plate shaped member 2 (pg. 23 of Application). The etched partition walls 7 define a plurality of pressure chambers 8, a plurality of ink inlet passages 9, and a common ink storage chamber 10 (pg. 23 of Application).

The non-limiting embodiment of Fig. 1 also shows etched lands 11 that are formed in the second layer 5 at positions that respectively correspond to the plurality of pressure chambers 8.

APPELLANTS' BRIEF ON APPEAL
UNDER 37 C.F.R. § 1.192
U.S. Appln. No.: 09/708,514

The etched lands 11 are attached to extremities of the pressure producing devices 12 (pg. 24 of Application). The pressure producing devices 12 each have a piezoelectric vibrator and a laminated piezoelectric element for changing the pressure in the pressure chambers 8 (pg. 24 of Application).

Further, the non-limiting embodiment shown in Fig. 1 has a base member 16 attached to the front surface 2a of the plate shaped member 2. The base member 16 is provided with connecting holes 17, which connect with nozzle holes 19 of a nozzle plate 18 (pg. 24 of Application). The nozzle holes 19 are arranged at predetermined pitches that correspond to an ink dot density (pg. 24 of Application).

VI. ISSUES

1. Is claim 1 anticipated by JP 08-187868 to Nakamura et al. ("Nakamura")?
2. Are claims 3, 4 and 54 unpatentable over Nakamura in view of U.S. Patent No. 6,158,847 to Usui et al. ("Usui")?
3. Is claim 7 unpatentable over Nakamura in view of JP 06-023982 to Okazawa et al. ("Okazawa")?

VII. GROUPING OF CLAIMS

Claims 1, 3, 4, 7 and 54 do not stand or fall together for purposes of appeal. Specifically, the claims are grouped in the following manner:

1. Claims 1, 3, 4 and 54 stand or fall together; and
2. Claim 7 stands or falls alone.

VIII. ARGUMENTS

A. Claim 1 has been rejected under 35 U.S.C. § 102(b) as being anticipated by Nakamura.

Appellant submits that Nakamura does not disclose or suggest a plate shaped member, as recited in claim 1. For example, claim 1 recites a plate shaped member having an etched partition wall formed on a front surface and an etched land formed on a back surface.

In the May 21, 2003 Final Office Action, the Examiner maintains that Nakamura discloses the above features, but does not indicate that the features of Nakamura are “etched” (pg. 3 of Final Office Action). Rather, the Examiner maintains that the claimed “etching” does not further limit the apparatus because it does not further define any structure (pg. 4 of the Final Office Action). In response, Appellant amended the claims to more clearly define the structure, i.e. “etched” partition wall, “etched” land, etc. (October 14, 2003 Amendment). Although the October 24, 2003 Advisory Action indicates that the claim amendments were entered, the Examiner did not provide any further comments. Nevertheless, during the Examiner Interview of January 27, 2004, the Examiner continued to maintain that an etched surface is not structurally different from the surface disclosed by the prior art of record.

In the Office action of May 21, 2003, the Examiner states:

[P]roduct-by-process claims are not limited to the manipulations of the recited steps/processes, only the structure implied by the processes (MPEP 2113). Applicant further appears to suggest that there are certain advantages that can be obtained by the present invention made by such processes that cannot be obtained by the disclosure of Nakamura et al. However, only the

APPELLANTS' BRIEF ON APPEAL
UNDER 37 C.F.R. § 1.192
U.S. Appln. No.: 09/708,514

claimed product is limited, not the advantages obtained from the implied processes.

Paper No. 15, page 6.

Appellant respectfully submits that the Examiner has misapplied MPEP 2113 to the current application.

MPEP section 2113 provides in part:

The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "**etched**" are capable of construction as structural limitations.)

(Emphasis added.)

In claim 1, the fact that certain elements are etched imparts distinctive structural characteristics to the final product. In the Amendment filed March 4, 2003, Appellant argued that the etching process provides certain advantages to the final product. These advantages naturally flow from the distinctive structural characteristics resulting from the etching process. These distinctive structural characteristics are defined in the claim, by use of the term "etched". As an example, Appellant notes that etched glass is obviously structurally different from non-

APPELLANTS' BRIEF ON APPEAL
UNDER 37 C.F.R. § 1.192
U.S. Appln. No.: 09/708,514

etched glass. The structural characteristics of etched glass imparts a different appearance, use, etc.

In view of the above, Appellant submits that the Examiner has improperly failed to consider the structural limitation "etched".

In addition, Appellant respectfully submits that Nakamura does not disclose, or remotely suggest, an etched partition wall. For example, in the ink jet recording head disclosed by Nakamura, only the island part 9, that is disposed on one side of the polymer film 8, is an etched structure (para. [0019] of computer translated version of Nakamura). On the other hand, Nakamura fails to disclose that the spacer 3 (i.e. alleged partition wall), which is disposed on the other side of the polymer film 8, as well as the ink inlet ports 5, and the reservoirs 6, are etched structures. Likewise, Appellant submits that the spacer 3 is not an etched structure because the pressure chamber 4 is tapered, while the vertical line of the section of the reservoir 6 is not tapered, as shown in Fig. 2 of Nakamura. Appellant submits that it would be technically impossible to form both a tapered vertical line and a non-tapered vertical line using the same etching process.

Further, Appellant submits that a high level of structural accuracy and positioning can be achieved if the claimed structures are formed by etching. For example, the features recited in claim 1 are instrumental in realizing the following advantages described in the present Application.

- i) The adhesive does not protrude into the pressure chamber and the ink inlet

passage. Further, the accuracy of the positional relation between the pressure chamber and the land is improved. Therefore, the difference in ink jetting characteristics between the nozzle holes can be reduced (i.e. non-limiting embodiment described from line 37 of page 17 to line 7 of page 18).

ii) Depths of the pressure chamber and the ink inlet passage, which affect ink jetting characteristics, are defined by the thickness of the first layer. Therefore, the differences in depth (sectional area) between the pressure chambers, and the ink inlet passages can be reduced. This further reduces the difference in ink jetting characteristics between the nozzle holes (i.e. non-limiting embodiment described in lines 8 to 16 of page 18).

Appellant submits that the above-mentioned advantages cannot be obtained by the ink jet recording head disclosed in Nakamura. Rather, the above-mentioned advantages of the present invention are realized due to the "etched" structures of the claimed invention. Therefore, Appellant submits that the present invention is structurally distinct from the ink jet recording head disclosed in Nakamura, and thus, patentable over the cited reference.

APPELLANTS' BRIEF ON APPEAL
UNDER 37 C.F.R. § 1.192
U.S. Appln. No.: 09/708,514

B. Claims 3, 4 and 54 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura in view of Usui

1. Claim 3

Since claim 3 contains features which are analogous to the features recited in claim 1, Appellant submits that claim 3 is patentable over the cited references for at least analogous reasons as presented above.

2. Claims 4 and 54

Since claims 4 and 54 are dependent upon claims 1 and 3, respectively, Appellant submits that claims 4 and 54 are patentable at least by virtue of their dependency.

C. Claim 7 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura in view of Okazawa

Since claim 7 is dependent upon claim 1, and Okazawa fails to cure the deficient teachings of Nakamura set forth above, Appellant submits that claim 7 is patentable at least by virtue of its dependency.

In addition, claim 7 recites that the plate shaped member does not have any adhesive layer between the first and the intermediate layers, nor between the second and the intermediate layers.

APPELLANTS' BRIEF ON APPEAL
UNDER 37 C.F.R. § 1.192
U.S. Appln. No.: 09/708,514

In the May 21, 2003 Final Office Action, the Examiner acknowledges that Nakamura fails to disclose the above features, but contends that Okazawa does. In particular, the Examiner maintains that Okazawa does not have adhesive layers (pg. 6 of Final Office Action). However, the reference discloses the use of adhesives in regard to projection 6 (i.e. the alleged first layer) (para. [0017] of computer translated version of Okazawa). Since Okazawa discloses the use of adhesives, Appellant submits that the reference fails to cure the deficient teachings of Nakamura.

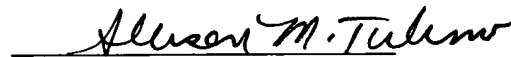
Accordingly, even if taken together, Appellant submits that the references fail to teach or suggest the features recited in claim 7.

IX. CONCLUSION

The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Allison M. Tulino
Registration No. 48,294
Date: April 21, 2004

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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APPENDIX

CLAIMS 1, 3, 4, 7 and 54 ON APPEAL:

1. An ink-jet recording head comprising:

a pressure producing device for changing a pressure in a pressure chamber containing an ink;

a plate-shaped member having a front surface and a back surface, the plate-shaped member having an etched partition wall formed on the front surface, the partition wall defining the pressure chamber, an ink inlet passage and a common ink storage chamber, the plate-shaped member having an etched land formed on the back surface so as to correspond to the pressure chamber and be in contact with an extremity of the pressure producing device, the plate-shaped member having an etched elastic and deformable portion so as to surround the land, the elastic and deformable portion being capable of being elastically deformed by a deformation of the pressure producing device; and

a nozzle plate provided with a nozzle hole through which an ink particle is jetted when the pressure in the pressure chamber is changed by the deformation of the pressure producing device, the nozzle plate being disposed on a side of the front surface of the plate-shaped member,

wherein the plate-shaped member includes a first layer having the front surface, a second layer having the back surface and an intermediate layer sandwiched between the first layer and the second layer, and

wherein the partition wall is formed such that a desired portion of the first layer selectively is etched over the intermediate layer so that the first layer is penetrated, and the land is formed such that a desired portion of the second layer is etched selectively over the

intermediate layer so that the second layer is penetrated.

3. An ink-jet recording head comprising:

a pressure producing device for changing a pressure in a pressure chamber containing an ink;

a plate-shaped member having a front surface and a back surface, the plate-shaped member having an etched partition wall formed on the front surface by a first etching process, the partition wall defining the pressure chamber, an ink inlet passage and a common ink storage chamber, the plate-shaped member having an etched land formed on the back surface that corresponds to the pressure chamber and is in contact with an extremity of the pressure producing device, the plate-shaped member having an etched elastic and deformable portion that surrounds the land, the elastic and deformable portion being capable of being elastically deformed by a deformation of the pressure producing device; and

a nozzle plate provided with a nozzle hole through which an ink particle is jetted when the pressure in the pressure chamber is changed by the deformation of the pressure producing device, the nozzle plate being disposed on a side of the front surface of the plate-shaped member,

wherein the plate-shaped member includes a first layer having the front surface, a second layer having the back surface, an intermediate layer sandwiched between the first layer and the second layer, a first adhesive layer bonding the first layer and the intermediate layer together and a second adhesive layer bonding the second layer and the intermediate layer together,

wherein the partition wall is formed such that a desired portion of the first layer is etched selectively over the first adhesive layer so that the first layer is penetrated, and the land is formed

such that a desired portion of the second layer is etched selectively over the second adhesive layer so that the second layer is penetrated.

4. The ink-jet recording head according to claim 1, wherein the first and the second layers are formed of a stainless steel, and the intermediate layer is formed of a polymer film.

7. An ink-jet recording head according to claim 1,
wherein the plate-shaped member does not have any adhesive layer between the first and the intermediate layers nor between the second and the intermediate layers.

54. The ink-jet recording head according to claim 3 wherein the first and the second layers are formed of a stainless steel, and the intermediate layer is formed of a polymer film.